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Low-voltage switchgear and controlgear - Security aspects

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1. Structure and Drafting Rules of Standardization Documents"

Drafting.

This document is equivalent to IEC TS63208.2020 "Cybersecurity of low-voltage switchgear and control equipment". The file type is produced by IEC 's technical

The technical specifications were adjusted into my country's guiding technical documents.

This document has made the following minimal editorial changes.

---Supplement the Chinese name of "IPsec" mentioned in the text and add it to the abbreviations section (see 3.2 and 7.4.7).

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

Introduction

An increasing number of low-voltage switchgear and control equipment (referred to as "devices" in this document) are equipped with data communications capabilities, which automatically increases the number of network

Cybersecurity risks. In addition, information technology is increasingly interconnected with industrial systems and is even integrated into industrial systems, thus increasing the number of

One risk.

Typically, low-voltage switching equipment (such as circuit breakers) or control equipment (such as overload relays or proximity switches) are equipped with data communication interfaces. it

They have local and remote connection capabilities and can be connected to logic

controllers or remote display terminals to access actual electrical parameters, monitoring data, etc.

data, record data and remote upgrade data.

For these typical power distribution and machinery control equipment, whether or not they have data communication capabilities, in order to keep the equipment protection functions safe and complete

To achieve an acceptable level of integrity, minimum network security requirements need to be specified. These requirements are intended to limit the vulnerabilities of data communications interfaces.

In order to maintain freedom of innovation to the greatest extent possible, the relevant requirements for a specific application are best determined through a systematic risk assessment approach.

This document is intended to.

a) Establish awareness of cybersecurity risks related to unexpected operations and loss of protective functions;

b) Provide minimum cybersecurity requirements for equipment to reduce unintended operation and protection functions in power distribution devices and machinery control systems

possibility of loss;

c) Provide guidance to avoid impairment of equipment functionality due to the implementation of safety countermeasures in all operating modes.

This document gives countermeasures applicable to the design of equipment (hardware, firmware, network interfaces, access control, systems) and the requirements for implementation and use.

Guidance for considering alternative countermeasures. This document refers to ISO /IEC 27001, IEC 62443 (all parts) and IEC 62351 (all parts)

related content.

As a first stage, the contents of this document will provide a reference for product standards. Future generalization of low-voltage switchgear and control equipment

Safety requirements are expected to be specified in IEC 60947-1.

Low voltage switchgear and control equipment cyber security

1 Scope

This document applies to the main safety-related functions of switchgear and control

equipment throughout their life cycle. suitable for use in its environmental conditions

Limit the scope of wired and wireless data communications methods and the physical accessibility of the device.

This document aims to increase awareness of security aspects and provide guidance and requirements for reasonable countermeasures to reduce risk vulnerabilities.

This document focuses on potential risks resulting from vulnerabilities.

---Unexpected operation of switchgear, control equipment or sensors may lead to hazardous situations;

---Protection function failure (over current, leakage current to ground, etc.).

This document does not include security requirements for information technology (IT) and industrial automation and control systems (IACS). For guidance only when switching equipment

use appropriate security countermeasures in equipment and control equipment derived from the basic safety publications ISO /IEC 27001 and

Shared safety publication IEC 62443 (all parts).

As a product safety publication, this document follows IEC Guide 120 and includes typical use case studies given in Appendix B.

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, the dated quotations

For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to

this document.

GB/T 22080-2016 Information technology security technology information security management system requirements (ISO /IEC 27001.2013,

IDT)

GB /Z 41912-2022 Low-voltage switchgear and control equipment embedded software development guide (IEC TR63201.2019,

IDT)

GB/T 42456-2023 Security technical requirements for information security IACS components of industrial automation and control systems (IEC 62443-

4-2.2019,IDT)

GB/T 42457-2023 Industrial automation and control system information security product security development life cycle requirements (IEC 62443-

4-1.2018,IDT)

IEC 60364-7-729 Low-voltage electrical installations Part 7-729.Requirements for operation and maintenance of aisles for special installations or locations

trolgear-Part 1.Generalrules)

Note. GB/T 14048.1-2012 Low-voltage switchgear and control equipment Part 1.General provisions (IEC 60947-1.2011, MOD)